WHAT IS CLAIMED IS:

1. A piston made of aluminum cast alloy,

wherein the aluminum cast alloy comprises:

Mg (Magnesium): equal to or less than 0.2 mass %,

Ti (Titanium): 0.05-0.3 mass %,

Si (Silicon): 10-21 mass %,

Cu (Copper): 2-3.5 mass %,

Fe (Iron): 0.1-0.7 mass %,

Ni (Nickel): 1-3 mass %,

P (Phosphorus): 0.001-0.02 mass %,

Al (Aluminum): the remaining portions, and impurities.

2. The piston made of aluminum cast alloy as claimed in Claim 1, wherein the aluminum cast alloy further comprises at least one of V (Vanadium): 0.02-0.3 mass %, and Zr (Zirconium): 0.02-0.3 mass %.

3. The piston made of aluminum cast alloy as claimed in Claim 1, wherein the aluminum cast alloy further comprises Mn (Manganese): 0.2-0.7 mass %.

4. The piston made of aluminum cast alloy as claimed in Claim 1, wherein the aluminum cast alloy further comprises Ca (Calcium) : 0.0005-0.003 mass %.

5. The piston made of aluminum cast alloy as claimed in Claim 1, wherein pre-use Vickers hardness of the piston is in the range from HV 70 to 100.

6. The piston made of aluminum cast alloy as claimed in Claim 1, wherein size of non-metal inclusion existing within

the piston is less than 100μm.

7. A method of manufacturing a piston made of aluminum cast alloy, the method comprising:

a casting step of forming a piston by casting aluminum cast alloy which comprises Mg (Magnesium): equal to or less than 0.2 mass %,and Ti (Titanium): 0.05-0.3 mass %, Si (Silicon): 10-21 mass %, Cu (Copper): 2-3.5 mass %, Fe (Iron): 0.1-0.7 mass %, Ni (Nickel): 1-3 mass %, P (Phosphorus): 0.001-0.02 mass %, Al (Aluminum): the remaining portions and impurities, and

a cutting step of providing a cutting operation to the piston.

8. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 7, wherein the aluminum cast alloy further comprises at least one of V (Vanadium): 0.02-0.3 mass %, and Zr (Zirconium): 0.02-0.3 mass %.

9. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 7, wherein the aluminum cast alloy further comprises Mn (Manganese): 0.2 -0.7 mass %.

10. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 7, wherein the aluminum cast alloy further comprises Ca (Calcium) : 0.0005-0.003 mass %.

11. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 7, wherein after the piston has been formed by the step of casting, the piston is stood to cool to room temperature.

12. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 7, wherein after the piston has

been formed by the step of casting, prior to or after the cutting step, an annealing step of retaining the piston at a temperature of 250-400 °C for 0.5-24 hours is carried out so that pre-use Vickers hardness of the piston is in the range from HV 70 to 100.

13. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 12, wherein after the casting step has been carried out, a solution heat treatment step of retaining the piston at a temperature of 450-510 °C for 1-12 hours is carried out, then, a quenching step of rapidly cooling the piston is provided, and subsequently, the annealing step is carried out.

14. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 13, wherein after the quenching step has been carried out, an aging step of retaining the piston at a temperature of 180-280 °C for 1-12 hours is provided, and subsequently, the annealing step is carried out.

15. A piston made of an aluminum cast alloy,

wherein the aluminum cast alloy comprises:

Mg (Magnesium): 0.2-2 mass %,

Ti (Titanium): 0.05-0.3 mass %,

Si (Silicon): 10-21 mass %,

Cu (Copper): 2-3.5 mass %,

Fe (Iron): 0.1-0.7 mass %,

Ni (Nickel): 1-3 mass %,

P (Phosphorus): 0.001-0.02 mass %,

Al (Aluminum): the remaining portions, and

impurities, and

wherein pre-use Vickers hardness (Vickers hardness prior to the initiation of use) of the piston is in the range from HV 70 to 100.

16. The piston made of aluminum cast alloy as claimed in Claim 15, wherein the aluminum cast alloy further comprises at least one of V (Vanadium): 0.02-0.3 mass %, and Zr (Zirconium): 0.02-0.3 mass %.

17. The piston made of aluminum cast alloy as claimed in Claim 15, wherein the aluminum cast alloy further comprises Mn (Manganese): 0.2-0.7 mass %.

18. The piston made of aluminum cast alloy as claimed in Claim 15, wherein the aluminum cast alloy further comprises Ca (Calcium) : 0.0005-0.003 mass %.

19. The piston made of aluminum cast alloy as claimed in Claim 15, wherein size of non-metal inclusion existing within the piston is less than 100 μm.

20. A method of manufacturing a piston made of aluminum cast alloy, the method comprising:

a casting step of forming a piston by casting aluminum cast alloy which comprises Mg (Magnesium): 0.2-2 mass %, Ti (Titanium): 0.05-0.3 mass %, Si (Silicon): 10-21 mass %, Cu (Copper): 2-3.5 mass %, Fe (Iron): 0.1-0.7 mass %, Ni (Nickel): 1-3 mass %, P (Phosphorus): 0.001-0.02 mass %, Al (Aluminum): the remaining portions and impurities,

an annealing step of retaining the piston at a temperature of 250-400 °C for 0.5-24 hours in order to make that pre-use

Vickers hardness of the piston in the range from HV 70 to 100, and

a cutting step of providing a cutting operation to the piston prior to or after the annealing step.

21. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 20, wherein the aluminum cast alloy further comprises at least one of V (Vanadium): 0.02-0.3 mass %, and Zr (Zirconium): 0.02-0.3 mass %.

22. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 20, wherein the aluminum cast alloy further comprises Mn (Manganese): 0.2 -0.7 mass %.

23. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 20, wherein the aluminum cast alloy further comprises Ca (Calcium) : 0.0005-0.003 mass %.

24. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 20, wherein after the casting step is carried out, a solution heat treatment step of retaining the piston at a temperature of 450-510 °C for 1-12 hours is carried out, then, a quenching step of rapidly cooling the piston is provided, and subsequently, the annealing step is carried out.

25. The method of manufacturing a piston made of aluminum cast alloy as claimed in Claim 24, wherein after the quenching step is carried out, an aging step of retaining the piston at a temperature of 180-280 °C for 1-12 hours is provided, and subsequently, the annealing step is carried out.